AMENDMENT

Please amend the application as indicated hereafter.

In The Claims:

Claim 1. (previously presented) A method for delivering a biological material using a gene gun, comprising:

providing the gene gun comprising a pressurized chamber, a sprayer, a controller valve and a material delivery system;

placing a sample solution into the material delivery system, wherein the sample solution comprises at least the biological material;

triggering the gene gun and providing a gas through the controller valve to the pressurized chamber until the gas establishes a pressure equal to or lower than 100 psi;

releasing the sample solution from the material delivery system, so that the sample solution is accelerated by the gas in the pressurized chamber; and

discharging the sample solution out of the sprayer, wherein the sprayer includes a spray nozzle and a spray tube, and the spray nozzle comprises an interior contour, wherein the interior contour of the spray nozzle comprises a diverging part, a converging part and a spray neck positioned between the diverging part and the converging part and connected to the material delivery system, wherein the sample solution is released from the material delivery system around the spray neck of the spray nozzle and is released in a direction perpendicular to a direction of the flow of the gas, and the spray tube is a diverging straight tube, so that a discharge speed of the sample solution is supersonic and the biological material is evenly injected into a target,

wherein the biological material is delivered without using micro-carriers or particle carriers.

Claim 2. (original) The method of claim 1, wherein the biological material is a nucleic acid.

Claim 3. (original) The method of claim 1, wherein the biological material is a protein.

Claim 4. (original) The method of claim 1, wherein the biological material is a virion.

Claim 5. (original) The method of claim 1, wherein the biological material is a vaccine.

Claim 6. (previously presented) The method of claim 1, wherein the biological material is an immunogen.

Claim 7. (original) The method of claim 1, wherein the sample solution is accelerated to a speed of 200-300 m/s by the gas.

Claim 8. (previously presented) The method of claim 1, wherein a pressure at the sprayer's outlet is about 1 atmospheric pressure.

Claim 9. (previously presented) The method of claim 1, wherein a range of the interior contour of the converging part includes:

$rt < Rt < 2rt$, wherein Rt represents a curvature radius of the converging part, rt is a radius of the spray neck; and

wherein $\Theta < 15$ degrees, wherein Θ is an angle between the diverging part and a center axis of the spray tube.

Claim 10. (original) The method of claim 1, wherein the gas includes a nitrogen gas or a helium gas.

Claim 11. (currently amended) A method for gene transformation by using a gene gun, comprising:

providing the gene gun comprising a pressurized chamber, a sprayer, a controller valve and a material delivery system;

placing a sample solution into the material delivery system, wherein the sample solution comprises at least a nucleic acid;

triggering the gene gun and providing a gas through the controller valve to the pressurized chamber to establish a pressure equal to or lower than 100 psi, wherein the gas is a nitrogen gas or a helium gas;

releasing the sample solution from the material delivery system after the gas in the pressurized chamber establishes the pressure, so that the sample solution is accelerated by the gas in the pressurized chamber; and

discharging the sample solution out of the sprayer, wherein the sprayer includes a spray nozzle and a spray tube, and the spray nozzle comprises an interior contour, wherein the interior contour of the spray nozzle comprises a diverging part, a converging part and a spray neck positioned between the diverging part and the converging part and connected to the material delivery system, wherein the ~~liquid~~ sample solution is released from the material delivery system around the spray neck of the spray nozzle and is released in a direction perpendicular to a direction of the flow of the gas, and the spray tube is a diverging straight tube, so that a discharge speed of the sample solution is supersonic and the ~~biological material~~ nucleic acid is evenly injected into a target,

wherein the nucleic acid is delivered without using micro-carriers or particle carriers.

Claim 12. (original) The method of claim 11, wherein the sample solution is accelerated to a speed of 200-300 m/s by the gas.

Claim 13. (previously presented) The method of claim 11, wherein a pressure at the sprayer's outlet is about 1 atmospheric pressure.

Claim 14. (previously presented) The method of claim 11, wherein a range of the interior contour of the converging part includes:

$rt < Rt < 2rt$, wherein Rt represents a curvature radius of the converging part, rt is a radius of the spray neck; and

wherein $\Theta < 15$ degrees, wherein Θ is an angle between the diverging part and a center axis of the spray tube.

Claim 15. (cancelled)